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A New Species of the Genus *Papirioides* (Collembola, Sminthuridae) from Xishuangbanna, China¹⁾

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Abstract A new species of sminthurid Collembola, *Papirioides yunnanus* sp. nov. is described and illustrated from Xishuangbanna, Yunnan Province, China.

Key words: Collembola; Sminthuridae; *Papirioides*; Yunnan.

The genus *Papirioides* was established by FOLSOM (1924) on the basis of an East Indian species, *P. jacobsoni*, which has a spine-bearing protuberance on posterior dorsum of the greater abdomen. So far, the following 4 species are known as members of the genus: *P. mirabilis* (DENIS, 1929) from China, *P. dubia* (FOLSOM, 1932) from Hawaii, *P. aequituberculatus* STACK, 1965, from Vietnam and *P. uenoi* H. UCHIDA, 1966, from Japan (BETSCH, 1980). In this paper, a sixth species of the genus is newly described under the name *P. yunnanus* sp. nov.

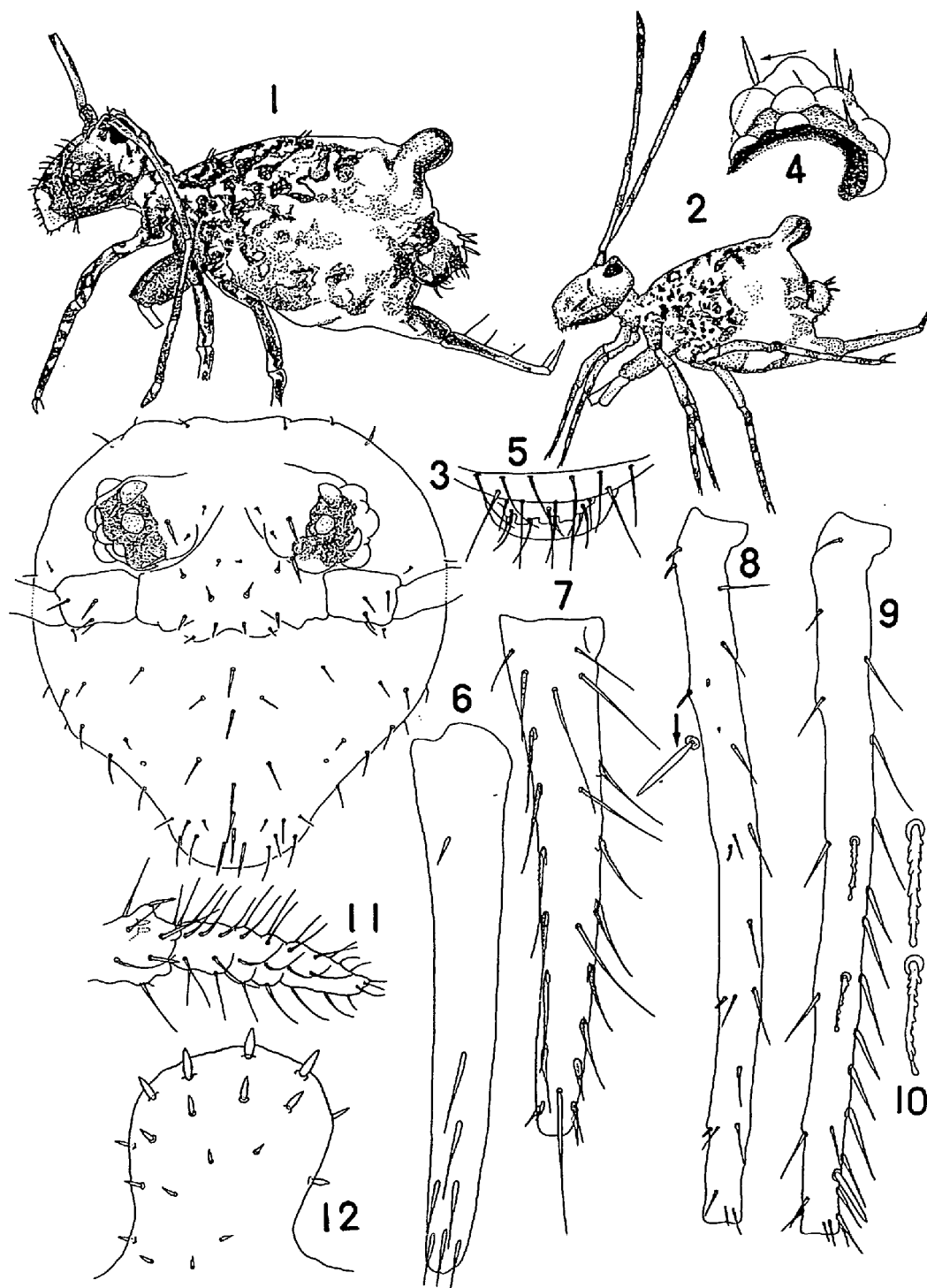
The present materials were collected in 1992 in the course of the Sino-Japanese cooperative study coordinated by Prof. G. IMADATÉ, Tokyo Medical and Dental University, and Prof. YIN Wen-Ying, Shanghai Institute of Entomology, Academia Sinica.

Papirioides yunnanus sp. nov.

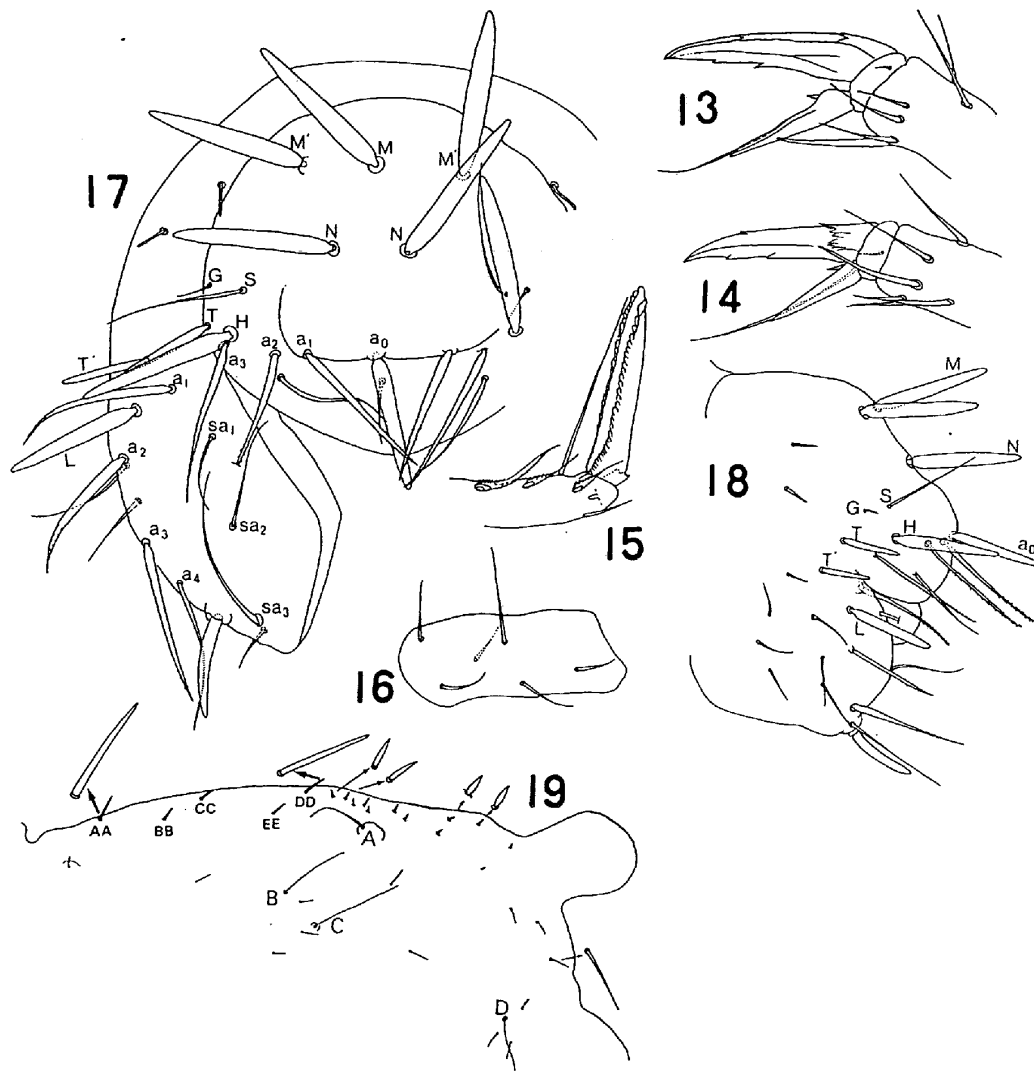
(Figs. 1–19)

Female. Ground color yellow; blue pigment mottled mostly on anterior and lateral surfaces of body and head as in Fig. 1. Dorsal organ, ventral tube and furca dark; eye field intensively pigmented. Legs with longitudinal streaks on each femur and 4 bands on each tibiotarsus. Antenna also banded with purple

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Figs. 1–12. *Papirioides yunnanensis* sp. nov. — 1, Habitus (female); 2, ditto (male); 3, chaetotaxy on head; 4, ocelli and tubercle; 5, labrum; 6, dentes (ventral view); 7, ditto (dorsal view); 8, hind tibiotarsus (posterior face); 9, ditto (anterior face); 10, blunt serrate setae on hind tibiotarsus (enlarged); 11, antennal segment IV; 12, chaetotaxy of hump (lateral view).



Figs. 13–19. *Papirioides yunnanus* sp. nov. — 13, Distal part of hind leg; 14, distal part of fore leg; 15, distal part of dens; 16, trochanteral segment of hind leg; 17, anogenital segment (anal orifice); 18, ditto (lateral view); 19, setae on dorsum.

pigment.

Head: Eye 8+8. Interorbital tubercles extremely developed, higher than top of eyes (Fig. 4), and with 2 rather spine-like setae and a minute seta (Fig. 3). Ant. III and IV divided into 7 and 5 subsegments, respectively. Ant. III-organ consisting of two blunt rods (Fig. 11). Labral setae 6/5, 5, 4 (Fig. 5). Vertical and facial setae as in Fig. 3; all vertical setae small; facial setae arranged as 1, 2, 1, 2, 1, 1, 1.

Thorax: Trochanter bearing 4, 5 and 6 simple setae upon fore, mid and hind legs, respectively (Fig. 16). Fore tibiotarsus with 4, mid with 5 cup sensillae which are blunt. Hind tibiotarsus with 6 cup sensillae and 2 modified blunt serrate setae

(Figs. 8–10). Unguis slender, with 2 strong inner teeth and 2+2 lateral teeth. Unguiculus with a single strong corner tooth and a subapical filament about as long as unguis (Figs. 13–14).

Abdomen: Integument minutely granulated all over body. Dorsal abdominal projection large, with short spine-like setae (Fig. 12). Tenaculum with tridentate rami bearing a basal process; corpus with 6 anterior setae. Manubrium with 8+8 setae dorsally. Dorsal dental setae L_1 – L_8 , ID_1 – ID_2 , D_1 – D_4 and E_1 – E_{10} arranged as in Fig. 7, being typical of the genus; L_2 – L_8 and E_2 to E_8 or E_9 with many coarse serrations; D_1 – D_4 and ID_1 – ID_2 simple. Dental chaetotaxy ventrally arranged as 3, 2, 1, 1, 1 (Fig. 6). Mucro serrated on both margins; serrations externally 41 and internally 30 (Fig. 15). Mucronal seta absent, but basal pseudonychium present (Fig. 15). Dorsal chaetotaxy as in Fig. 19; all setae of trunk small, but the setae AA and DD are larger and acuminate; posterior setae short spiny and numerous. Anogenital segment as in Figs. 17 and 18; setae M, M' and N large and blunt; setae H, T, T' and L also blunt, T and T' being smaller than the others; setae a_{1-3} on anal flap long and coarsely serrated on posterior halves, setae a_{1-4} on lateral flap also distally serrated, a_{1-3} being thicker than a_4 , seta sa_3 longer than sa_1 and sa_2 .

Body length: 2.6 mm.

Proportion: body length: antenna, 14: 13; antennal segment I: II: III: IV, 8: 54: 56: 11; antenna: head diagonal, 129: 53; relative length of subsegments of Ant. IV, 25: 9: 8: 9: 8; manubrium: dens: mucro, 42: 45: 14.

Male. Ground color and general morphology almost the same as in female (Fig. 2).

Body length: 1.8 mm.

Proportion: Body length: antenna, 11: 10; antennal segment I: II: III: IV, 7: 41: 45: 9; antenna: head diagonal, 100: 37; relative length of subsegments of Ant. IV, 20: 6: 7: 6: 8; manubrium: dens: mucro, 30: 33: 10.

Type series. Holotype ♀, allotype ♂, Xishuangbanna Tropical Botanical Garden, Xishuangbanna Dai Nationality Autonomous Region, Yunnan Province, from branches of *Citrus grandis* OSBECK, 2–XI–1992, R. ITOH leg. Paratypes 3 ♀, 1 ♂, same data as for holotype.

The specimens used in the present study, including the holotype and allotype, are to be deposited in the collection of Shanghai Institute of Entomology, Academia Sinica, but one paratype will be retained in the Biological Laboratory, Showa University.

Remarks. This new species is similar to *Papirioides aequituberculatus* STACK, 1965, in the length of abdominal projection, but the former is clearly distinguished from the latter by the facial chaetotaxy showing the pattern of 1, 2, 1, 2, 1, 1, 1 (in *aequituberculatus*, 1, 1, 2, 2, 1, 1, 1). Judging from DENIS's account (1929), which is rather brief and simple, the present species also resembles *P. mirabilis* (DENIS, 1929). However, it can be easily distinguished from the latter by the comparative location of protuberance on the great abdomen to the anogenital segment and length of

spine-like setae on the protuberance (in *mirabilis*, the protuberance is closer to the anogenital segment and ornamented with longer spine-like setae).

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References

- BETSCH, J. M., 1980. Éléments pour une monographie des Collemboles Symphypléones (Hexapodes, Apterygotes). *Mém. Mus. natn. Hist. nat. Paris*, (Ser. A), **116**: 1–227.
- DENIS, J. R., 1929. Notes sur les Collemboles recoltés dans ses voyages par le Prof. Silvestri. *Boll. Lab. Zool. gen. agr. R. Scuola Agric. Portici*, **22**: 166–180, 305–320.
- FOLSOM, J. W., 1924. East Indian Collembola. *Bull. Mus. comp. Zool. Harv.*, **65**: 505–517.
- STACK, J., 1965. On some Collembola of North Vietnam. *Acta zool. cracov.*, **10**: 345–372.

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